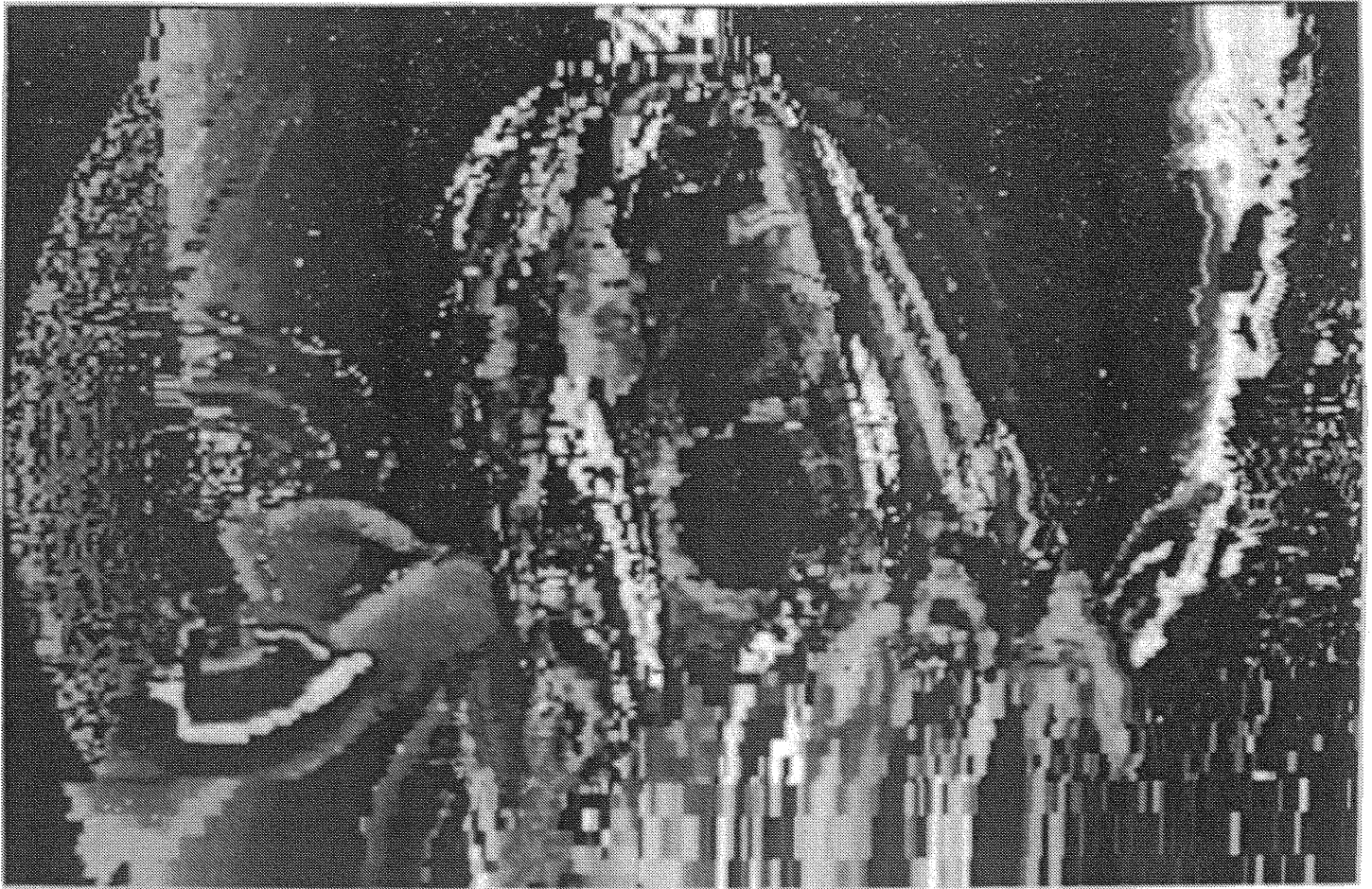


Artists Using Science and Technology

Ylem (Eye-lum): The primordial stuff out of which the universe emerged in the Big Bang

Ylem Newsletter
Vol.11, No. 7 August 1991



"Sacred Mound" computer art by Rodney Chang

Rodney Chang's Relative Art

In the computer image *Sacred Mound*, hints abound in the sharp, rough lines that Rodney Chang once did woodcuts. Although he once worked in bronze and other traditional media as well, his current body of work consists of nearly 50 paintings painstakingly emulating the pixel character of his computer graphics. The importance of computers to art and culture will be much more profound than the introduction of the camera, he believes, because these devices penetrate and shape so many more of our human activities.

His manually executed paintings memorialize an embryonic period in the development of computer graphics that is becoming history, a period when squarish low-resolution pixels and "jaggies" made computer images look peculiar. Taking an image off the screen like the one shown, he sends it to another painter in Hawaii or China for the time-consuming translation to pigment on canvas. In the first work, *Assembly*, in 1988, he himself faithfully copied 228,380

pixels onto canvas in 4mm squares. Using this method he calls "Pixelism," it took him a year working fulltime to execute.

As he did others he developed the "pseudopixelism" method: The canvas is covered with a fine pencilled grid. A slide of the computer art is beamed at it. The painter must mix by eye the average color of the cluster of pixels falling in each square of the grid. Although it's a painterly translation of the computer image, it's eerily like the original on the computer screen. Chang is deeply interested in the psychology of perception, so this pleases him. In his work he also enjoys blurring the distinctions between art and non-art, unique authorship and collaboration, human artifice and computer graphics to create a new synthesis. He dubs this "Relative Art."

Psychology in its many aspects is but one influence on his work. He has a PhD in art education and an interest in zoology and the physical sciences. What binds all together is the theoretical yet pragmatic personality of the artist, eclectic, experimental and rebellious.

—Trudy Myrrh Reagan

Ylem Events

Ylem Forum: Patterns in Mathematics and Nature

Wednesday, September 4, 8 pm

Presentations:

Jane Nielson: "Patterns in Geology: Micro to Macro." Nielson has been with the US Geological Survey since 1974. Her specialty is mapping rock types along the Colorado River on the California-Arizona border.

Michael McGuire: "Designer Fractals: A Visual Way to Create Iterated Functions." McGuire is author of the recent book, *An Eye for Fractals*. In it he explains what fractals are in non-mathematical terms, with his nature photographs as illustrations. He is an engineer at Hewlett-Packard and an exhibiting artist.

Dr. Luis Baptista: "Dialects in the Languages of Birds." Baptista, an ornithologist with the California Academy of Sciences, is co-author of *The Life of Birds*.

"Elemental Chaos," a fractal and music video by Sylvia Pengilly, art professor at Loyola University in New Orleans.

In the lobby:

Art by Myrrh and other Ylem artists, and "Geometry that Grows," an interactive project by Atoma, maker of geometric construction kits.

Ylem Field Trip and Party at Atoma Studio

Saturday, August 24, 12-4 pm

Atoma Studio produces Fractiles and other geometry toys, design tools and building sets. After a potluck lunch we will climb in a 12-foot-high tetrahedral tent and see the mirror illusions therein. Then we'll play with the numerous construction sets and mathematical oddities. Bring potluck dish and geometrical goodies to share. Atoma Studio, 1537 4th St. #D, San Rafael. Info: Trudy, (415) 856-9593; Dan at Atoma Studio, (415) 459-TOYS

Ylem Business Meeting

Thursday, September 10, 7:30 pm

Semi-annual meeting to plan projects for the coming year. See neon sculptor Beverly Reiser's fascinating home as well. 6979 Exeter Drive, Oakland. For directions, call Beverly: (415) 482-2483

About Patterns, Math and Nature

by Trudy Myrrh Reagan

Painting has always been where my talent and interests lay. Imagine my consternation to find I had chosen a college whose program was strongest in design, where much time was spent inventing patterns, something I was no good at. By the time I graduated I had discovered an inexhaustible swipe file, the *Scientific American*.

Even though I no longer had professors to dazzle, it was fun to lay out my science magazine clippings and notice how the patterns, such as brain coral, were much more inventive than most man-made ones. While dividing them into contours, spirals,

Continued on page 6

Illusionistic Imaging

by Jacques Desbiens

A related article by Jacques Desbiens
(A New Version of the Distorted Room)
appeared in the last issue.

Illusionism is an interactive artform, more than just the application of a technique or a simple perceptual error: It takes place with an observer who is confronted by clever appearances leading him to erroneous conclusions. No matter what the illusion, the objective is always the same, to make fiction seem real, interchange falsity and actuality.

We notice two main approaches. First of all, some illusionary forms strive for total believability and deception. The artwork itself becomes invisible, giving up its place to what is represented. This invisibility is what three-dimensional imaging technologies and virtual reality strive to achieve.

Second, we have "analytic illusionism," illusionary artwork that stimulates analysis of how the illusion works. For example, while analysing the limits and aberrations of perspective, M.C. Escher elaborated "fantastic perspective" of impossible architectures. By means of this approach, he demonstrated that perspective is a "scientific convention" that allows the artist to show the appearances of reality. The artist demonstrates to the observer the uncertainty of perception and appearances while exposing the mechanisms of the creation of the illusion. Since these artworks stimulate analysis of the illusionary process, we can identify them as "analytic illusionism" experiments.

Throughout history, illusionism has allied itself with science, first because analytic illusionism exposes some optical and geometrical properties of vision and

Continued on page 7

Computer-distorted image
by Russell Reagan. A pencil sketch
by Trudy Myrrh Reagan was scanned in and
manipulated in Photoshop. To see original image:
Flatten page at fold and view from just above the plane of
the paper near other end. This is a demonstration of
anamorphic art discussed in "Illusionistic Imaging" article.



Ylem South Bay Chapter

Beginning in September

Members isolated in the San Jose-Santa Cruz area are forming an Ylem chapter. Plans are to have informal meetings to augment our activities in the East Bay and San Francisco.

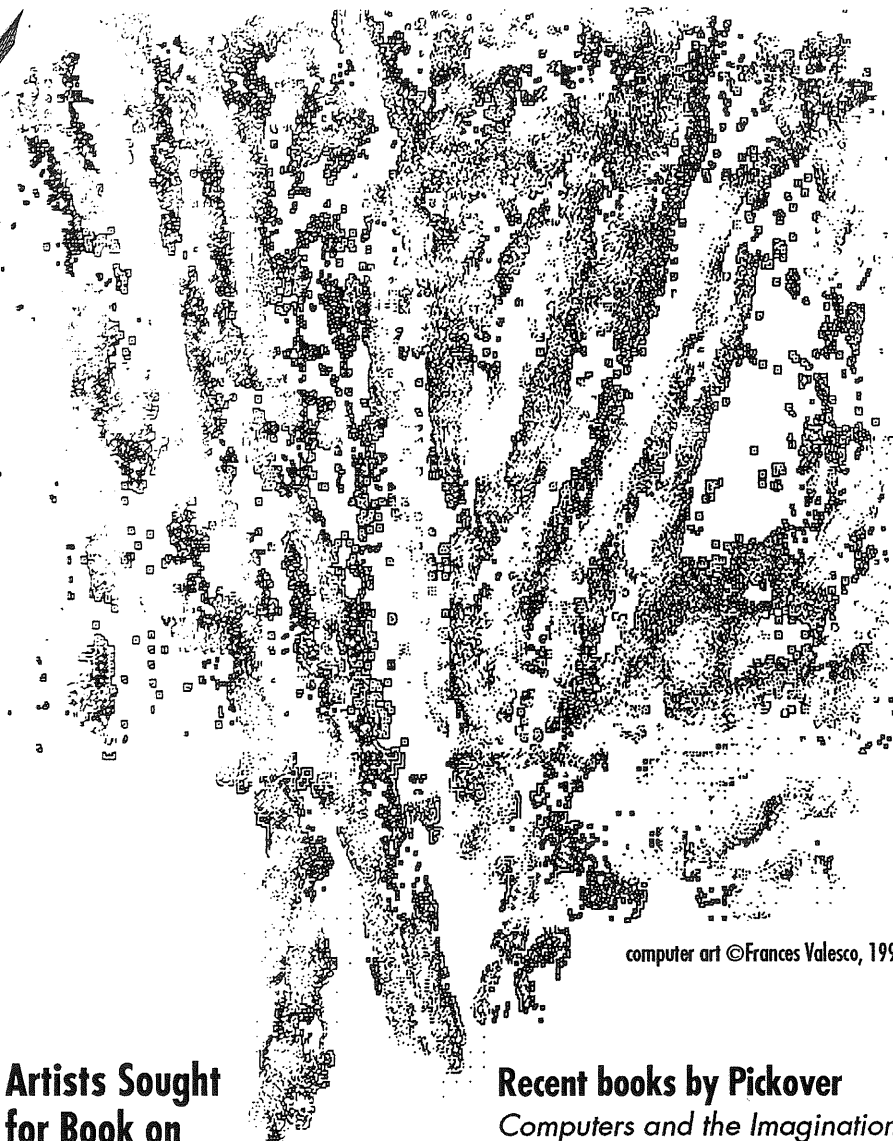
A chance to get to know each other! Cynthia Kurtz will organize the first meeting in September. She is interested in your suggestions: Cynthia, (408) 578-3881

News of Members

Ylem members in the SIGGRAPH '91 Art Show are: Cyberdada (Australia), Barbara Nessim, Kenneth Snelson and Susan Ressler. Snelson's piece consists of two huge stereo images to be viewed from a distance of 18 feet. Stewart Dickson chairs the panel, "The Third Dimension: It's not a Virtual one" on computer-aided sculpture that includes Bruce Beasley and Helaman Ferguson. "Tomorrow's Reality" show features a piece by Beverly & Hans Reiser and Marjorie Franklin.

In May and June, Helaman Ferguson showed 26 stone and bronze sculptures based on mathematical theorems at the New York Academy of Sciences ... Ken Rinaldo's goofy interactive kinetic sculptures delighted gallery-goers at Shapiro-Jameson Gallery in San Francisco in June ... The May/June issue of *Computerland* showed eleven illustrations by Barbara Nessim ... Nancy Frank did the art direction for Bill Graham's 10-hour concert, "The Gathering of the Tribes." *Spiral Symmetry*, edited by I. Hargittai and Ylem member Clifford Pickover, contains a work by Eleanor Kent. *Fivefold Symmetry* edited by I. Hargittai, includes a chapter by Pickover. Both are soon to be released by World Scientific Publishing Co. (See right for details.)

David Gaw wishes to contact members doing installations that respond to people in the room. His own work consists of a line of fence sections on motorized wheels that exhibit complex behaviors.



computer art ©Frances Valesco, 1991

Artists Sought for Book on High-Tech and Science Related Art

Ylem member Dr. Clifford Pickover's next book will be about high-tech artists, computing and related fields. Strong preference for submissions that are not the usual computer graphics or fractals and mathematics functions, but the unusual, such as strange sculptures made from computer parts or inspired by math. Also video, ionized gases, lasers & holograms, robotics, novel non-traditional media, and artists who use traditional media with images from science and mathematics. Send slides or photos, biography, personal statement, and permission to publish them. State whether or not to include your address in your chapter as well. Contact: Dr. Clifford Pickover, IBM Watson Research Center, Yorktown Hts., NY 10598; cliff@watson.ibm.com

Recent books by Pickover

Computers and the Imagination
Pickover's new book explores "visual adventures beyond the edge." He examines the ways in which visualization transforms how we both perceive and understand the world around us. Includes computer-generated spider webs, pain-inducing patterns(!), computer-generated poetry, and more. 304 illustrations. Highly praised by Martin Gardner in *Scientific American*. \$29.95 from St. Martin's Press, NY, 1991 (ISBN 0-312-06131-5)

Books on Symmetry

Available soon! *Spiral Symmetry* edited by I. Hargittai and Pickover, US\$48, and *Fivefold Symmetry* edited by I. Hargittai, US\$68. Info: World Scientific Publishing Co., 687 Hartwell St., Teaneck, NJ 07666; 1-800-227-7562 or from its London or Singapore Offices.

Pickover is a researcher in advanced computer graphics.

Events

July 29 - August 2

SIGGRAPH '91 (Las Vegas)

Annual conference on computer graphics. "Tomorrow's Reality" exhibit will include the interactive "Life on a Slice," by Beverly & Hans Reiser and Marjorie Franklin who will be with it continuously. Ask them about Ylem! (To find more about other Ylem artists involved, see *News of Members*, page 3). Ylem's "Birds of a Feather" special interest art group meets 12-1:30, Wed., July 31. Bring slides, portfolios, ideas to share. Info: Eleanor Kent, ekent@well.sf.ca.us. ISAST "Birds of a Feather" meeting will discuss the Art, Science and Technology Network (ASTN) and the Third International Symposium on Electronic Art (TISEA) in Australia in 1992, 12 or 2 pm (check catalog), Thur. Aug. 1. Info: Theo Ferguson, isast@garnet.berkeley.edu Info on entire conference: Lois Blankstein, SIGGRAPH, ACM HQ, 11 W. 42nd St., NY, NY 10036; (212) 869-7440; ankstein@um.cc.umich.edu

July 31, 8 pm

Richard L. Gregory:

"Making Sense of Illusions"

Lecture by Richard Gregory, Research Fellow at Oxford. Known internationally for his work on perception, he is author of *Eye and Brain*, and *Mind in Science*, editor of *The Oxford Companion to the Mind*. Tickets are \$7 (\$5 Exploratorium members). McBean Theatre, The Exploratorium, 3601 Lyon Street, San Francisco; (415) 561-0361

In August

Headache Lecture Series

Weekend lectures in conjunction with the exhibition about migraine visions, *Mosaic Visions*. Leading experts in the headache field, films, and a panel discussion with both physicians and patient-advocates are planned. The Exploratorium, 3601 Lyon St., San Francisco; (415) 561-0361

August 10, 7 pm

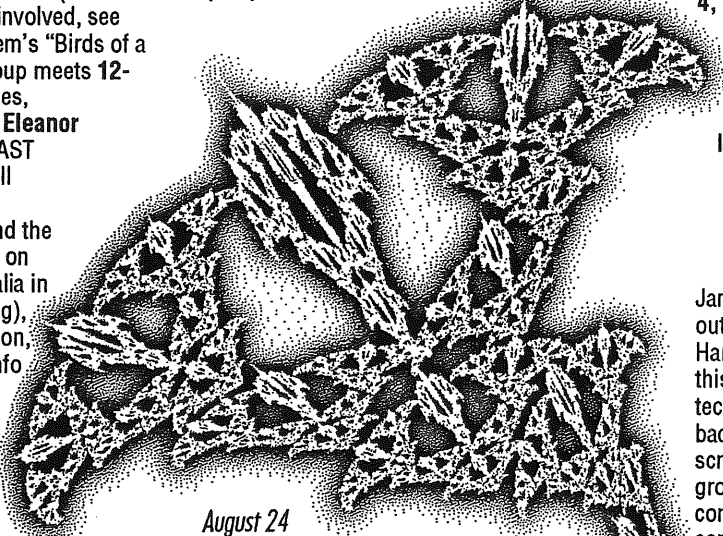
The Evolutionary Path to Trigram (the performance)

Chico MacMurtrie, kinetic sculptor and performance artist, has created pneumatic robotic musical instruments. This "concert" will be these musical bodies animating and playing themselves. Same address as Virtual Reality Symposium the same night (next listing).

August 10, 7:30 pm

Virtual Reality Symposium

Implications and applications of the expansion of technology in contemporary art with Scott Fisher, Brenda Laurel, Sharon Grace, Michael Naimark, Allucquere Rosanne Stone and others. Lecture Hall, San Francisco Art Institute, 800 Chestnut, San Francisco; (415) 771-7020 ext 88



September 7

3-D Event (Jutland, Denmark)

This 3-D Event is sponsored by the Danish Stereoscopic Society at The Danish Museum of Photography situated halfway across Jutland west of Ålborg. Info: Eric Kirschner, Parkgade 4, DK-6440 Augustenborg, Denmark; tel. 41 74 47 13 15

Image-enhanced version of a portion of "Birds" fractal art by Michael McGuire (Whole fractal appears on page 6.)

September 8

3-D Event (Hamar, Norway)

Jan Gjessing, an Ylem member tells us of an outdoor (indoor if bad weather) 3-D event in Hamar, about 100km north of Oslo. Readers of this newsletter may participate with their technologies. 3-D mixed-media presented by back-projection on to a large translucent screen. Holograms. Dance group and theatre group under black light. Fractal video art computed in real time. Participants, attendees contact: Interferens Hologram Gallery, Domkirkeodden, 2300 Hamar, Norway; tel. +47 (65) 25 050 or 30 659

September 10, 7:30 pm

Ylem Business Meeting

Please see page 2 for details.

September 10-13

Ars Electronica (Linz, Austria)

Festival of art, science and technology. Theme this year is "Out of Control," laying open the wounds of the post-industrial society and its capacity for destruction. It welcomes conferees with sensitivity, strong nerves and black humor! It will feature machine and robot theatre; ecological laboratories; video and films about theme; symposia with scientists and artists; Prix Arts Electronica awards. Info: Ars Electronica, Brucknerhaus Linz, Postfach 57, A-4010 Linz, Austria

September 25-29

International Festival of 3-D Images (Paris)

For details, see May newsletter. Info: Guy Ventouillac, ISU Congress Manager, 2 allée du Roule, 94260 Fresnes, France. Tel. +33 1 42 37 10 42. Update information: ISU Secretary, Judy Fentress, CH-3183 Albligen, Switzerland; tel. +41 (31) 741-1653, +41 (1) 850 62 23; tentress%skyway.enet.dec.com

August 24

Ylem Gathering at Atoma Toys

Please see page 2 for details.

September 2-6

Eurographics '91 (Vienna)

12th annual conference of the European Association for Computer Graphics. Technical program with speakers, tutorials, an industrial exhibition, a slide, video & film competition and presentation, and a poster show. All this and Vienna too! Info: Eurographics '91, Interconvention, Austria Center Vienna, A-1450 Vienna, Austria; tel. 43 1 2369 2640; fax 43 1 2369 648; eg91@eigvs4.una.ac.at

September 4, 7:30 pm

Ylem Forum: Patterns in Math & Nature

Please see page 2 for details.

September 4-8

European Media Art Festival (Osnabrück, Germany)

Current experimental film and video art, video installations. Interdisciplinary seminars and symposia. Festival is set within an exhibition taking place from September 4-22 showing sculptural works and installations of international media artists. Contact: European Media Art Festival, Postfach 1861, Hasestraße 71, D-4500 Osnabrück, Germany; tel. 0541 21658, fax 0541 28327



Exhibits

August 1-24

The Evolutionary Path to Trigram (the exhibit)

Chico MacMurtrie shows computer-driven robotic sculptures, videos and drawings. The sculptures are humanoid robotic sculptures, powered by compressed air, that play themselves. Several are activated by the viewer's presence. Reception and Preview, **Wed., July 31, 5:30-7:30 pm.** (Aug. 10 performance, see Events above). **Walter/McBean Gallery, San Francisco Art Institute, 800 Chestnut, San Francisco, CA; (415) 771-7020, ext. 88**

August 1-31

Gaijin Kubuki Variations

Computer art by Elizabeth Lawhead, author of a chapter in *Mastering Corel Draw*. Book signing, **Aug. 1, 1-5 pm.** Sponsored by Abaci Gallery of Computer Art. **Powell's Technical Bookstore, 33 NW Park Ave., Portland, OR; (503) 228-3906**

August 9-11

Handmade in USA

American Crafts Council Fair includes some artists in unusual hi-tech media. **Herbst Pavillion, Fort Mason Center, Bay & Laguna, San Francisco; (415) 896-5060**

August 11 - September 12

Nu Work Sho

Nance Paternoster shows large-format computer art, light sculptures with computer-generated images and 3-D computer collages. Reception: **Aug. 11, 1-4 pm.** **Sabin Chiropractic, 3892 24th St., San Francisco; (415) 826-8300**

Through August 17

Addressing Images

A multi-media installation on the subject of dresses that incorporates interactive computer technology including a piece by Ylem member Lucia Grossberger. Co-sponsored by South Bay Women's Caucus for Art. Reception July 19, 7-10. **San Jose Art League, 14 S. First St., San Jose; (408) 287-8435**

Through August 30

Computer Art (Portland, OR)

Works by Elizabeth Lawhead. Paintings and computer art based on Japanese Ukiyo'e prints. Note: exhibit is in classrooms where access is sometimes limited. **University of Oregon Continuation Center, 720 SW 2nd Ave., Portland, OR; (503) 725-3055**

Some items reprinted from FINEART Forum, Vol. 5: No. 12 and BAVC June/July '91 Vol. 15, No. 3

Opportunities

Deadline August 1

Cine

Cine, a non-profit organization, selects non-feature films and videotapes for entry in international film festivals. Work by professional producers, sponsors, students and amateurs are eligible. Selected professional works receive a Golden Eagle. Last year, 80 juries nationwide selected 380 winners from 1,225 entries. Winning a Golden or Cine Eagle also may qualify a producer to enter the Academy Awards. Formats: 3/4", 1/2" and 16mm. Fees: \$75-125. Festival date: December 5-7. Contact: **Richard Calkins, Cine, 1001 Connecticut NW, #1016, Washington, DC 20036; (202) 785-1136; fax (202) 785-4114**

Deadline August 20

Dallas Video Festival

This year's theme: "Politics, TV and the War." Works created with Amiga, Fisher Price Pixelvision and video/computer games also sought. Formats: 3/4", 1/2", Hi8, Betacam, Fee: \$15. Categories: Open, Festival Date: November 14-17, contact: **Barton Weiss, Dallas Museum of Art, 215 A Henry Street, Dallas, TX 75226; (214) 948-7300**

Deadline August 31

Joey Awards

Formats: 3/4". Fee: \$65. Categories include Electronic Effects, Multi-Image, Music. Awards. Festival Date: November. Sponsored by the San Jose Convention and Visitors Bureau in association with the San Jose Film and Video Commission. Critiques will be given to each entrant. Contact: **Joe O'Kane, San Jose Film and Video Commission, 333 W. San Carlos, #1000, San Jose, CA 95110; (408) 295-9600**

Exhibits, continued

Through August 30

Connections in Chicano and Latino Art

Includes computer works by Ylem member Lucia Grossberger. **Center for the Arts, Yerba Buena Center, 100 Brannan, San Francisco**

Through September 1

West Coast Glass

Nearly 40 artists show works in one of the most high-tech, dazzling crafts media. **California Crafts Museum, Ghirardelli Square, 900 North Point, Box 25, San Francisco, CA 94109; (415) 771-1919**

Through September 14

Electronic Comix & Computer Art

The computer as a cartoon artist's tool. Also call to find when the artist-in-residence for the month will demo. **Cartoon Art Museum, 665 3rd St., San Francisco, CA 94107; (415) 546-9481**

Deadline August 31

Artex '91 Open Competition

For 2nd International Biennale in Nagoya, Japan. Works sought whose surface, body, or images use computers, electronics, sound, video, HDTV, laser, new materials, robots, holograms etc. in an entirely innovative and fresh mode of expression, completed or made public since June 1989. Actual works to arrive **Sept. 11-16.** Grand-prix: 1 million yen. Submit: application form; description of exhibit (including sketch, description of operation including placement of electrical outlets etc.). Application fee: 8000 yen per entry in the form of a bank transfer, to arrive at the office by Friday, **August 31.** Account: Council for the International Biennale in Nagoya. Tokai Bank, Sakura-dori Branch, Account No. 1001721. For prospectus contact: **The Open Competition, The Council for International Biennale in Nagoya, c/o Chunichi Shimbun, Sannomaru 1-6-1, Naka-ku, Nagoya, 460-11, Japan; tel. 052-221-0753; fax 052-221-0739**

Deadline August 31

Program Director, Television and Video (Banff, Canada)

Executive producer of video and television projects to be responsible for: working in collaboration with artists from various disciplines; developing workshops and training programs in response to the needs of the arts community and industry; and directing a staff of production specialists. Must have significant experience as a director and/or producer in professional video and television, plus major accomplishments. Experience in innovative artists' video activity, planning both innovative programming about the arts, and programs that highlight artists' videos desirable. Priority will be given to Canadian citizens and permanent residents. Send curriculum vitae, a cover letter re relevant career goals, and NTSC video tapes of work to: **Director of Personnel Services, The Banff Centre, Box 1020, Banff, Alberta, Canada, T0L 0C0; (403) 762-6175; fax (403) 762-6116**

Deadline September 1

Arte Contemporaneo (ARCO)

A 1992 international video festival in Madrid that includes exhibits of hardware, software, screen production and university projects. Exhibit booth deadline: **Sept. 1**, video show deadline: **Nov. 1.** Info: **Natasha Molina, Victor de la Serna, 31-#3 dcha., E-28016 Madrid, Spain; tel. 91-519-89-52; fax 91-250-53-78**

Submissions Sought for Book on Science and Tech-Art

Ylem member Dr. Clifford Pickover is editor of this anthology. Please see page 3 for details.

More Opportunities on next page

Needs and Offerings

Patterns, Math and Nature, continued from page 2

Chaos: The Software

James Gleick, author, and Rudy Rucker, computer scientist, have created software to simulate five of the central ideas in *Chaos: Making of a New Science*. Runs on PC computers (PC/XT/AT/PS2 or compatible with EGA or VGA graphics and 640K of ram). \$59.95. Order by phone: 1-800-688-2344

Video and Art Book Catalog

New from ArtCom. Videos by contemporary artists are now reasonably priced! This catalog carries very far-out stuff. The books on contemporary art are also useful and unusual. Catalog, \$5 from: ArtCom/Contemporary Arts Press, La Mamelie, Inc., PO Box 193123 Rincon Center, San Francisco, CA 94119-3123; (415) 431-7524; fax (415) 431-7841

Archival Quality and Computer Art

Verbum, Spring '91 (issue #5.1) has a useful article, "Fine Art Output: How Can You Make It Last?" by Arlen Britton. Photographic prints outlast printouts by far; but the recommended Cibacromes will deteriorate after 28 years in the light. Another process supposed to last more than 700 years is astronomically expensive. Dyes used in these processes are less stable than artists' pigments. (Another artist tells me one can preserve one's art digitally, keep "re-releasing" new ones). Info: *Verbum*, PO Box 12564, San Diego, CA 92112; (619) 233-9977; fax (619) 233-9976

Opportunities, continued

Panscan Computer Teleconferencing

Discuss mail art issues by modem. Participate in on-line, interactive experiments. To log on to Echo and get your free 30-day password, call Echo Communications at (212) 989-8411 (300, 1200, 2400 baud). Join Panscan by typing "J Pan" when you see the "And Now?" prompt. Info: Panscan and the Post Art Network, Mark Bloch, Panpost PO Box 1500, New York, NY 10009-8905

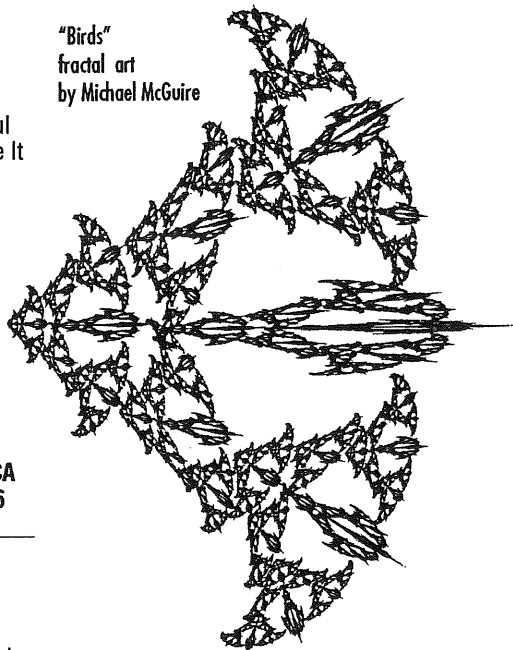
Call for Papers: "Art in Science, Science in Art"

This issue of *Leonardo* will be edited by Al Copley, G. Careri and J. Mandelbrot. Articles sought on the influence on visual artists of scientific concepts or culture other than through the use by artists of hi-tech; conversely, the influence of artists on science; and generally, what art inspiration and science discovery have in common re mechanisms, feelings, evolutions, trends, ideas, etc. Send manuscript proposal to: Prof. J. Mandelbrot, 1442A Walnut, Berkeley, CA 94709; isast@garnet.berkeley.zedu

cells, branches and so on, I was arrested by the occurrence of the same motifs at different scales: snakes and meandering rivers, snails and galaxies.

I didn't realize this twenty-five years ago, but exploring the wealth of possibilities in natural patterns is a life's work, continually refreshed by new scientific discoveries. I look back upon when viruses were seen for the first time, and the form of some were found to be Platonic solids; a rocket fly-by of Jupiter showed that its roiling banded clouds

"Birds"
fractal art
by Michael McGuire



Art and Technology Resource File

Curators of international institutions use this file. Project descriptions, slides, resumes, schematics and other work samples sought. Contact: Parabola Arts Foundation, 131 Spring Street, #4EF, New York, NY 10012

Reflux Network

An experiment in the decentralization of the arts coordinated by Carnegie Mellon University and the Universidade de São Paulo for the 21st International Biennial of São Paulo, Sept. 21 - Dec. 10. Groups of artists to act as nodes of inspiration in the net using any of the following are needed: telephones, computers, faxes, slow scan TV, telewriters and videophones; translators helpful. Each team will propose themes and methods. Catalog to be published. *Latest news:* Nodes have formed in seven countries. If solid artist teams can be established, the network may continue at least until TISEA in Australia in 1992, making it a

had the most beautiful fluid dynamics imaginable; tunnelling electron microscopes "felt" the atomic lattices of graphite and found them as regular as weaving; and chaos studies found ways to describe and generate the most complex patterns yet. Computers that made obvious the link between math, algorithms, natural processes and visual result fell into the hands of rather unskilled people like myself.

I have discovered that when we pull on that thread in all we see called "pattern" we do not draw out a thread to use as a tool to make wallpaper designs. Instead, we find ourselves drawn into a web of complex understandings about the embedded Design of all things material. The next decade promises to reveal much about the organization of the brain, from the arrangement of neurons to the perceptual sub-routines that process pattern recognition. It may become provable that we respond to and invent certain patterns because that it is how we ourselves are put together; that for all our observation and analytic powers, we do not stand apart.

planetary event. In California, the Center for Contemporary Music, SFSU, SFAI, ArtCom, JFK Univ., have joined. Ylem members Vernon Reed (TX) and Stephen s'Soreff (NY) are also on-line. Link up and participate! Info: Artur Matuck, Studio for Creative Inquiry, College of Fine Arts, Carnegie Mellon Univ., Pittsburgh, PA 15213-3890; (412) 268-3454; Internet: reflux@andrew.cmu.edu

Cyberarts International

Exhibitors sought for conference and exposition on emerging technology in film, video, music, live theatre, theme parks, computer games and education, Nov. 14-17 in Pasadena, CA. Booths, \$1200 for 8 X 10 ft. space. Sponsored by *Keyboard* magazine in conjunction with *Verbum* magazine. Info: Bob Gelman, 20085 Stevens Creek Blvd., Cupertino, CA 95014; (408) 446-1105; fax (408) 446-1088

Art and Science Slide/Video Bank

Bridgeport Discovery Museum in Connecticut is planning shows for the next three years. Send materials with SASE, resume, bio, artist statement, and whatever else you like to Ylem member Peter Terezakis at 50 West 22nd Street, NY, NY 10010; (212) 929-8978



Illusionistic Imaging, continued from page 2

nature, but above all, the scientific method helps the illusionist to find novel techniques for illusions, for instance: in the art of perspective. The works of E.G. Robertson on the techniques of optical projections, cinematographic special effects by Georges Méliès, experiments by Adelbert Ames and Op Art are all clear examples of analytic illusionism using science. Computers, holography and other new technologies now expand the possibilities.

Anamorphic art ("the geometric distortion of an image or object from a specific point of view"), represents this approach. The observer approaching the correct viewing point of an anamorphic work is amazed to find a nonsense image becoming recognizable (see illustration below). The geometrical structure of an illusionary process is revealed, as well as the ambiguity of the pictorial representation, abstract and figurative. The study of perspective and anamorphism by Renaissance artists led to the elaboration of projective geometry.

Six types of anamorphosis are:

1. *Two-dimensional* images distorted in such a way that the representation can

be identified only when one is at an acute angle in relation to the picture plane.

2. *Catoptric* ("the study of mirror effects") distortions which need to be observed with a mirror that can restore the image (cylindrical, conical or pyramidal anamorphosis).

3. *Three-dimensional* objects, installations or architecture distorted from a unique point of view (the distorted room of Ames, etc.).

4. *Accelerated perspective*, progressive size reduction from a central vanishing point to give the observer the impression of deep space. Today, this form of anamorphosis is used mainly in movie special effects.

5. *Cinema technologies*. Image compression with an anamorphic lens in Cinemascope permits a wide field. In the hemispheric cinema of Omnimax, a curvilinear distortion allows the projection inside a dome of an image covering the entire spectator's field of vision, provoking an effect of three-dimensionality.

6. Illusion of the three dimensions based not only on *stereopsis* but also the *monoscopic* illusion of 3-D created by a 2-D anamorphic image which, when observed from the predetermined point of view, seems to detach itself from the plane. With the combination of stereoscopy and anamorphic distortion, the 3-D effects obtained are very powerful, seeming to stand up perpendicularly from the picture plane placed horizontally ("La géométrie du relief visuel 3D—perspective binoculaire" de Bernard S. Bonbon, Paris, Eyrolles, 1990, shows the geometry of this kind of anamorphosis).

In the same way that computer imaging has brought a renewal of stereoscopy and the invention of virtual reality systems, new technologies will aid not only anamorphic art, but all forms of illusion.

As described previously (*Ylem Newsletter*, July 1991), I built a distorted room for Expotec '89 in Montréal, extending the ideas of Adelbert Ames, Jr. with innovations of my own to make the installation more dynamic and the 3-D anamorphosis more powerful. These kinds of experiments using mirrors, projections and 3-D imaging, have given me the chance to study the reaction of people to strong spatial illusions.

I intently pursue this type of research at ADYTUM, a laboratory for research and design specializing in visual illusions. In this field, I experiment not only with the projection possibilities of stereoscopic anamorphosis, but above all with the application of anamorphism in a new 3-D "Real Imaging" projection system I am developing with François Aubin, a physicist specializing in optics and interactive computer systems. We use computers to apply curvilinear anamorphic distortions to images projected in a catoptric system in order to produce 3-D real images visible in 360° in color, ones that could be animated and even be interactive. This display is totally different from other 3-D imaging technologies (stereoscopy, holography, etc.) and virtual reality systems. As its aesthetic and illusionist capacities are numerous, we are sure that it will bring to artists a way to create synesthetic artworks. We anticipate presenting our real-imaging system to the artistic and scientific community in a few months.

Brain Cell

On-going project. Send your stamp design, rubber stamp, or 150 stickers or seals to Japanese artist who will print or paste these materials onto 150 sheets. One of these sheets and a list of participants' addresses sent to each participant. Brain Cell is always seeking a change, does not save stuff, so don't mail materials for several issues. Send to **Ryosuke Cohen 3-76-1-A-613 Yagumokitacho Moriguchi-City Osaka 570 Japan**

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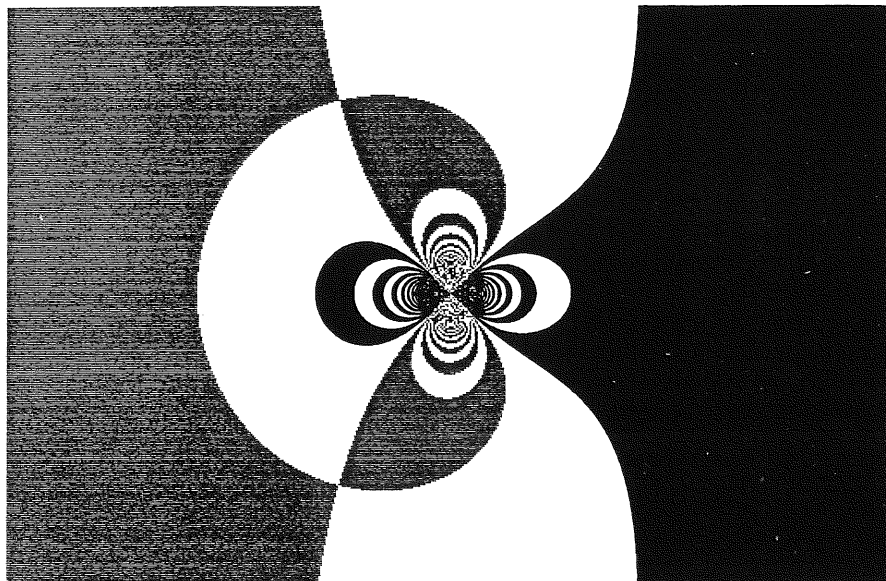
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**August
Newsletter**

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